FIG . 1(1)

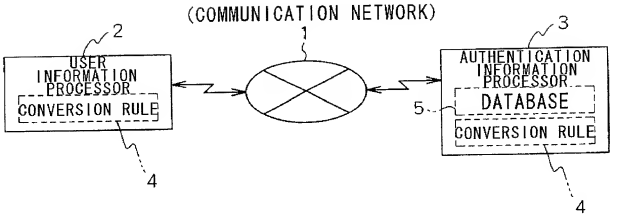

(COMMUNICATION NETWORK)
1
2
USER INFORMATION PROCESSOR
CONVERSION RULE
4
3
AUTHENTICATION INFORMATION PROCESSOR
DATABASE
5
CONVERSION RULE
4

FIG . 1(2)

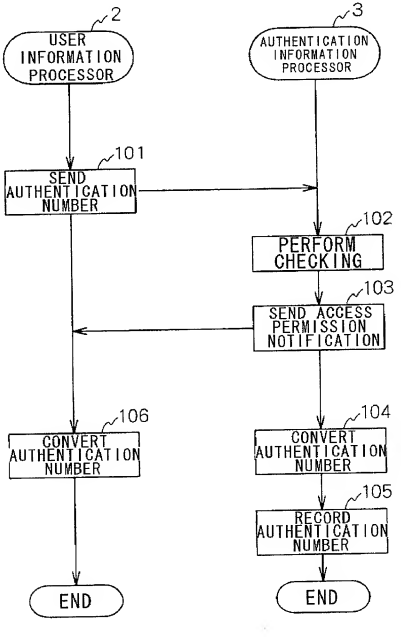

2
USER INFORMATION PROCESSOR
3
AUTHENTICATION INFORMATION PROCESSOR
101
SEND AUTHENTICATION NUMBER
102
PERFORM CHECKING
103
SEND ACCESS PERMISSION NOTIFICATION
106
CONVERT AUTHENTICATION NUMBER
104
CONVERT AUTHENTICATION NUMBER
105
RECORD AUTHENTICATION NUMBER
END
END

FIG . 2(1)

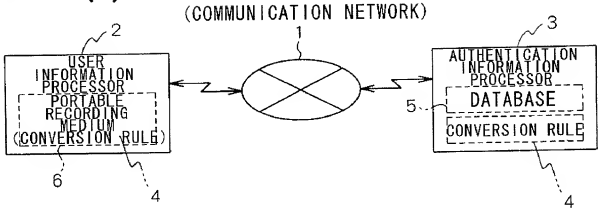

(COMMUNICATION NETWORK)
1
2
USER INFORMATION PROCESSOR
PORTABLE RECORDING MEDIUM
(CONVERSION RULE)
6
4
3
AUTHENTICATION INFORMATION PROCESSOR
5
DATABASE
CONVERSION RULE
4

FIG . 2(2)

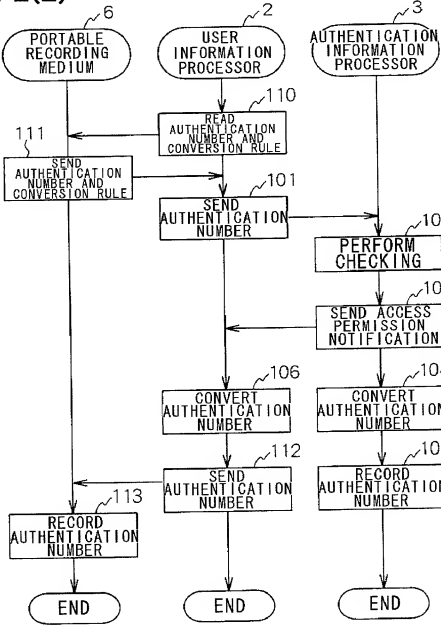

6
PORTABLE RECORDING MEDIUM
2
USER INFORMATION PROCESSOR
3
AUTHENTICATION INFORMATION PROCESSOR
110
READ AUTHENTICATION NUMBER AND CONVERSION RULE
111
SEND AUTHENTICATION NUMBER AND CONVERSION RULE
101
SEND AUTHENTICATION NUMBER
102
PERFORM CHECKING
103
SEND ACCESS PERMISSION NOTIFICATION
106
CONVERT AUTHENTICATION NUMBER
104
CONVERT AUTHENTICATION NUMBER
112
SEND AUTHENTICATION NUMBER
105
RECORD AUTHENTICATION NUMBER
113
RECORD AUTHENTICATION NUMBER
END
END
END

FIG . 3(1)

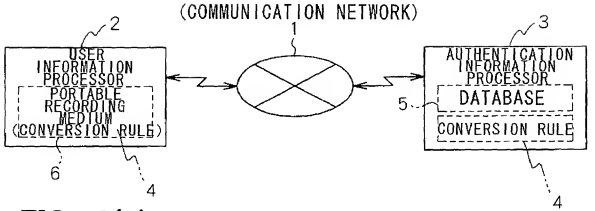

(COMMUNICATION NETWORK)
1
2
USER INFORMATION PROCESSOR
PORTABLE RECORDING MEDIUM (CONVERSION RULE)
6
4
3
AUTHENTICATION INFORMATION PROCESSOR
5
DATABASE
CONVERSION RULE
4

FIG . 3(2)

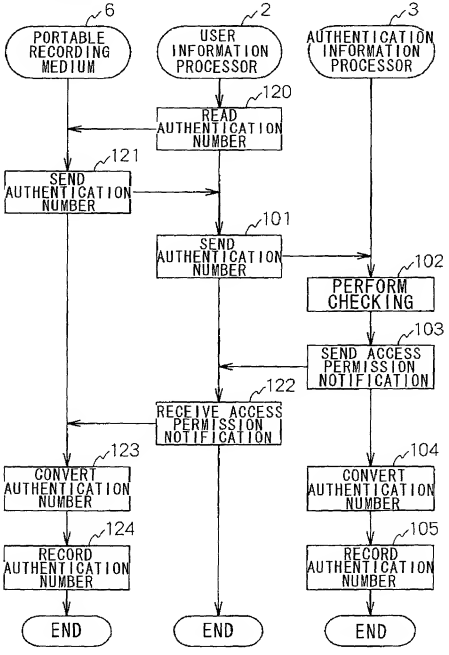

6
PORTABLE RECORDING MEDIUM
2
USER INFORMATION PROCESSOR
3
AUTHENTICATION INFORMATION PROCESSOR
120
READ AUTHENTICATION NUMBER
121
SEND AUTHENTICATION NUMBER
101
SEND AUTHENTICATION NUMBER
102
PERFORM CHECKING
103
SEND ACCESS PERMISSION NOTIFICATION
122
RECEIVE ACCESS PERMISSION NOTIFICATION
123
CONVERT AUTHENTICATION NUMBER
104
CONVERT AUTHENTICATION NUMBER
124
RECORD AUTHENTICATION NUMBER
105
RECORD AUTHENTICATION NUMBER
END
END
END

FIG . 4(1)

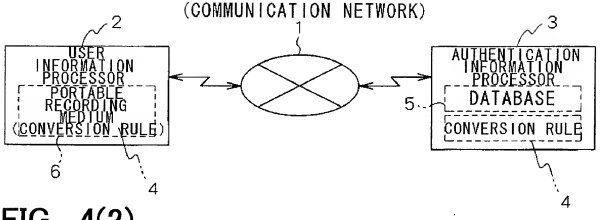

(COMMUNICATION NETWORK)
1
2
USER INFORMATION PROCESSOR
PORTABLE RECORDING MEDIUM
(CONVERSION RULE)
3
AUTHENTICATION INFORMATION PROCESSOR
5
DATABASE
CONVERSION RULE
6
4
4

FIG . 4(2)

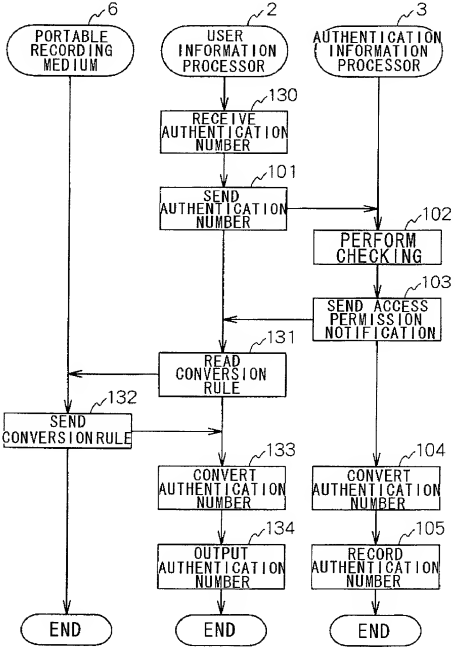

6
PORTABLE RECORDING MEDIUM
2
USER INFORMATION PROCESSOR
3
AUTHENTICATION INFORMATION PROCESSOR
130
RECEIVE AUTHENTICATION NUMBER
101
SEND AUTHENTICATION NUMBER
102
PERFORM CHECKING
103
SEND ACCESS PERMISSION NOTIFICATION
131
READ CONVERSION RULE
132
SEND CONVERSION RULE
133
CONVERT AUTHENTICATION NUMBER
104
CONVERT AUTHENTICATION NUMBER
134
OUTPUT AUTHENTICATION NUMBER
105
RECORD AUTHENTICATION NUMBER
END
END
END

FIG . 5(1)

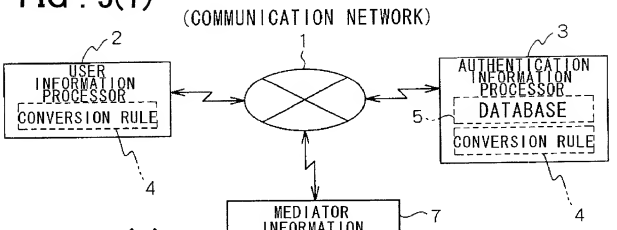

(COMMUNICATION NETWORK)
1
2
USER INFORMATION PROCESSOR
CONVERSION RULE
4
3
AUTHENTICATION INFORMATION PROCESSOR
5
DATABASE
CONVERSION RULE
4
MEDIATOR INFORMATION PROCESSOR
7

FIG . 5(2)

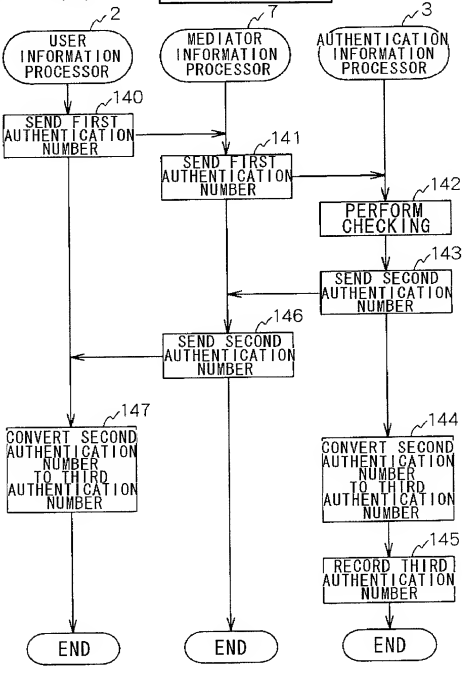

2
USER INFORMATION PROCESSOR
7
MEDIATOR INFORMATION PROCESSOR
3
AUTHENTICATION INFORMATION PROCESSOR
140
SEND FIRST AUTHENTICATION NUMBER
141
SEND FIRST AUTHENTICATION NUMBER
142
PERFORM CHECKING
143
SEND SECOND AUTHENTICATION NUMBER
146
SEND SECOND AUTHENTICATION NUMBER
147
CONVERT SECOND AUTHENTICATION NUMBER TO THIRD AUTHENTICATION NUMBER
144
CONVERT SECOND AUTHENTICATION NUMBER TO THIRD AUTHENTICATION NUMBER
145
RECORD THIRD AUTHENTICATION NUMBER
END
END
END

FIG . 6(1)

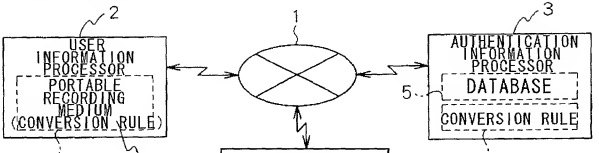

2
USER
INFORMATION
PROCESSOR
PORTABLE
RECORDING
MEDIUM
(CONVERSION RULE)
1
3
AUTHENTICATION
INFORMATION
PROCESSOR
5
DATABASE
CONVERSION RULE
6
4
MEDIATOR
INFORMATION
PROCESSOR
7
4

FIG . 6(2)

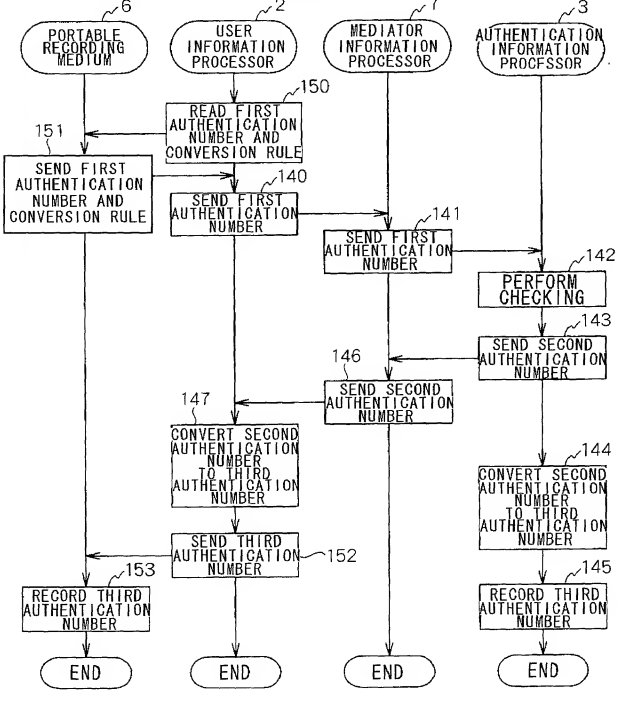

6
PORTABLE
RECORDING
MEDIUM
2
USER
INFORMATION
PROCESSOR
7
MEDIATOR
INFORMATION
PROCESSOR
3
AUTHENTICATION
INFORMATION
PROCESSOR
150
READ FIRST
AUTHENTICATION
NUMBER AND
CONVERSION RULE
151
SEND FIRST
AUTHENTICATION
NUMBER AND
CONVERSION RULE
140
SEND FIRST
AUTHENTICATION
NUMBER
141
SEND FIRST
AUTHENTICATION
NUMBER
142
PERFORM
CHECKING
143
SEND SECOND
AUTHENTICATION
NUMBER
146
SEND SECOND
AUTHENTICATION
NUMBER
147
CONVERT SECOND
AUTHENTICATION
NUMBER
TO THIRD
AUTHENTICATION
NUMBER
144
CONVERT SECOND
AUTHENTICATION
NUMBER
TO THIRD
AUTHENTICATION
NUMBER
SEND THIRD
AUTHENTICATION
NUMBER
152
153
RECORD THIRD
AUTHENTICATION
NUMBER
145
RECORD THIRD
AUTHENTICATION
NUMBER
END
END
END
END

FIG . 7(1)

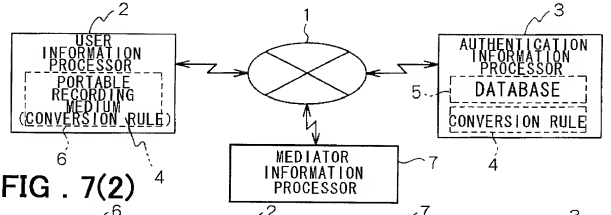

2
USER INFORMATION PROCESSOR
PORTABLE RECORDING MEDIUM (CONVERSION RULE)
6
4
1
3
AUTHENTICATION INFORMATION PROCESSOR
5
DATABASE
CONVERSION RULE
4
MEDIATOR INFORMATION PROCESSOR
7

FIG . 7(2)

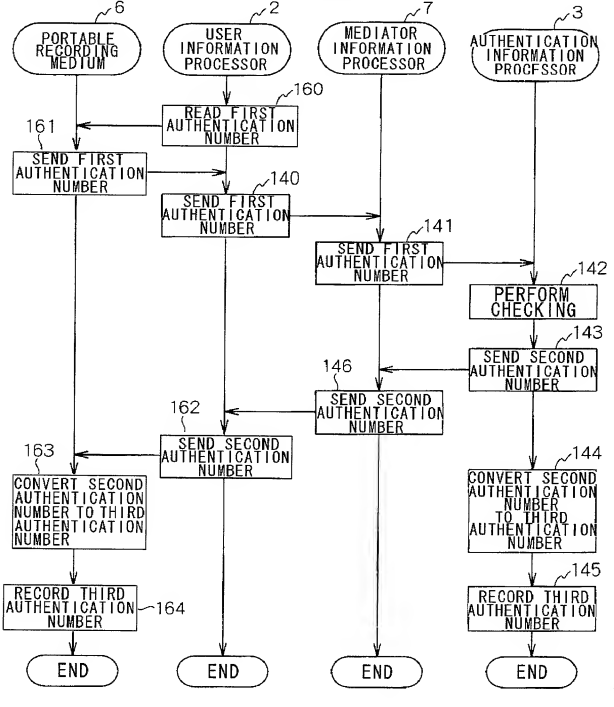

6
PORTABLE RECORDING MEDIUM
2
USER INFORMATION PROCESSOR
7
MEDIATOR INFORMATION PROCESSOR
3
AUTHENTICATION INFORMATION PROCESSOR
160
READ FIRST AUTHENTICATION NUMBER
161
SEND FIRST AUTHENTICATION NUMBER
140
SEND FIRST AUTHENTICATION NUMBER
141
SEND FIRST AUTHENTICATION NUMBER
142
PERFORM CHECKING
143
SEND SECOND AUTHENTICATION NUMBER
146
SEND SECOND AUTHENTICATION NUMBER
162
SEND SECOND AUTHENTICATION NUMBER
163
CONVERT SECOND AUTHENTICATION NUMBER TO THIRD AUTHENTICATION NUMBER
144
CONVERT SECOND AUTHENTICATION NUMBER TO THIRD AUTHENTICATION NUMBER
RECORD THIRD AUTHENTICATION NUMBER
164
145
RECORD THIRD AUTHENTICATION NUMBER
END
END
END
END

FIG . 8(1)

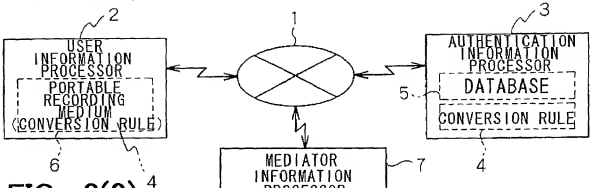

2
1
3
USER INFORMATION PROCESSOR
PORTABLE RECORDING MEDIUM (CONVERSION RULE)
AUTHENTICATION INFORMATION PROCESSOR
DATABASE
CONVERSION RULE
5
6
4
MEDIATOR INFORMATION PROCESSOR
7
4

FIG . 8(2)

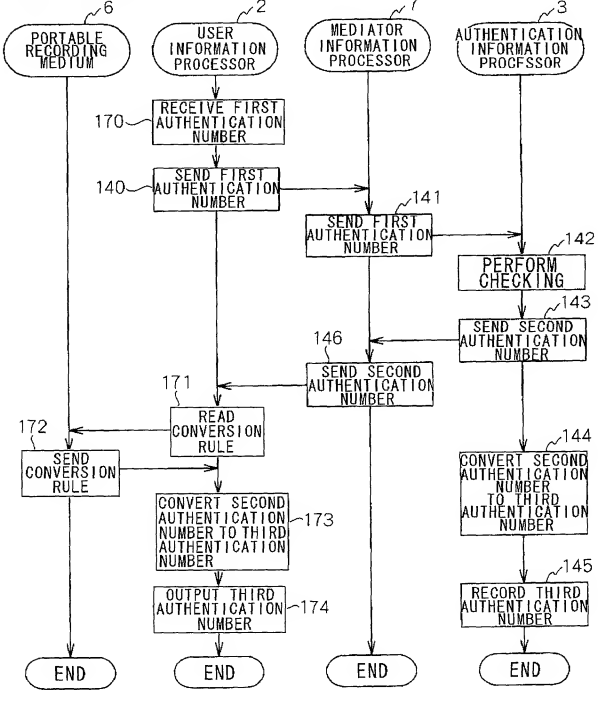
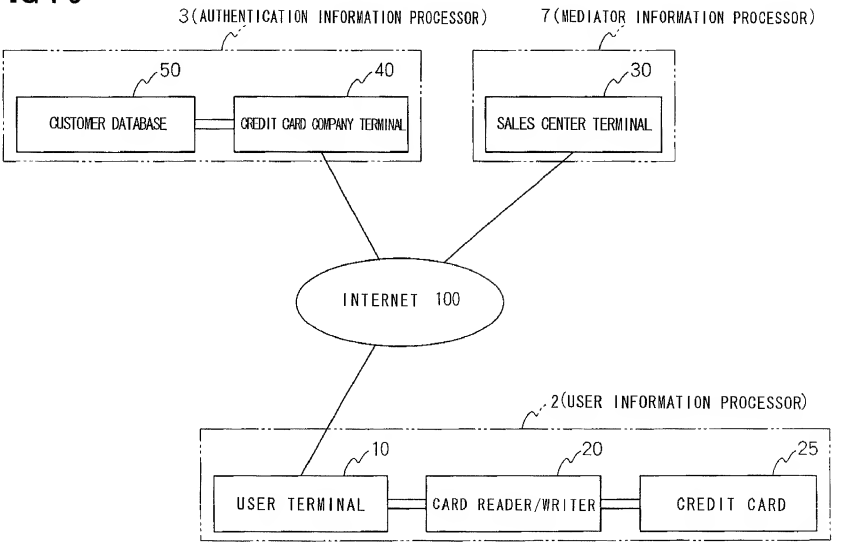

6
2
7
3
PORTABLE RECORDING MEDIUM
USER INFORMATION PROCESSOR
MEDIATOR INFORMATION PROCESSOR
AUTHENTICATION INFORMATION PROCESSOR
170
RECEIVE FIRST AUTHENTICATION NUMBER
140
SEND FIRST AUTHENTICATION NUMBER
141
SEND FIRST AUTHENTICATION NUMBER
142
PERFORM CHECKING
143
SEND SECOND AUTHENTICATION NUMBER
146
SEND SECOND AUTHENTICATION NUMBER
171
READ CONVERSION RULE
172
SEND CONVERSION RULE
144
CONVERT SECOND AUTHENTICATION NUMBER TO THIRD AUTHENTICATION NUMBER
173
CONVERT SECOND AUTHENTICATION NUMBER TO THIRD AUTHENTICATION NUMBER
145
RECORD THIRD AUTHENTICATION NUMBER
174
OUTPUT THIRD AUTHENTICATION NUMBER
END
END
END
END

FIG . 9



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"User Authentication Device and Electric Commerce System Using the Device"
Q64565
Filed May 23, 2001

FIG. 10

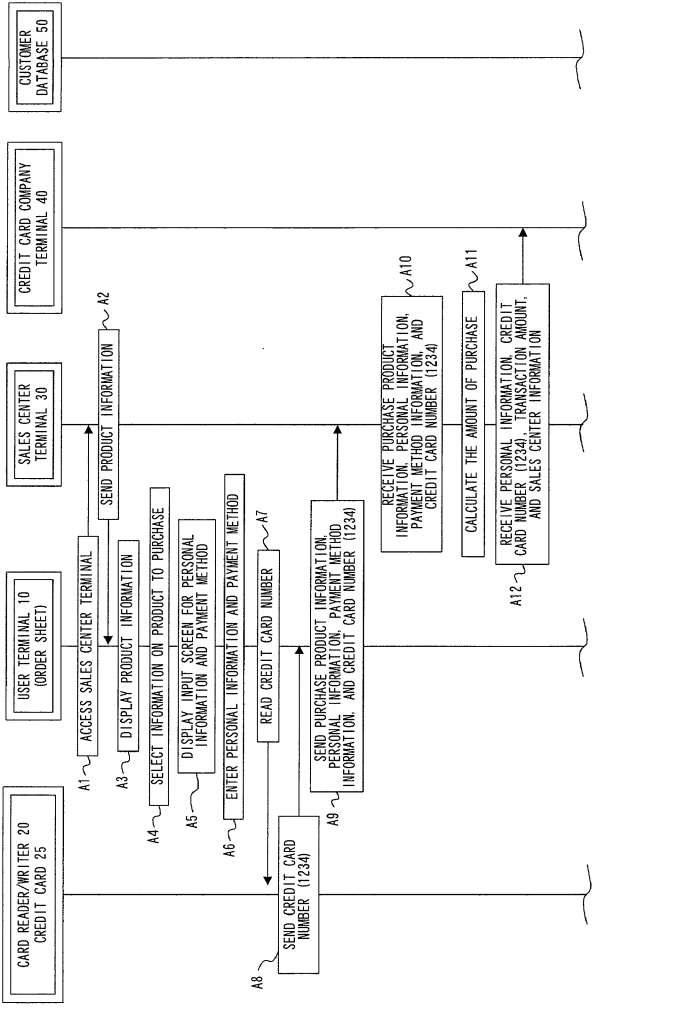
CARD READER/WRITER 20
CREDIT CARD 25
USER TERMINAL 10
(ORDER SHEET)
SALES CENTER TERMINAL 30
CREDIT CARD COMPANY TERMINAL 40
CUSTOMER DATABASE 50
A1 ACCESS SALES CENTER TERMINAL
A2 SEND PRODUCT INFORMATION
A3 DISPLAY PRODUCT INFORMATION
A4 SELECT INFORMATION ON PRODUCT TO PURCHASE
A5 DISPLAY INPUT SCREEN FOR PERSONAL INFORMATION AND PAYMENT METHOD
A6 ENTER PERSONAL INFORMATION AND PAYMENT METHOD
A7 READ CREDIT CARD NUMBER
A8 SEND CREDIT CARD NUMBER (1234)
A9 SEND PURCHASE PRODUCT INFORMATION, PERSONAL INFORMATION, PAYMENT METHOD INFORMATION, AND CREDIT CARD NUMBER (1234)
A10 RECEIVE PURCHASE PRODUCT INFORMATION, PERSONAL INFORMATION, PAYMENT METHOD INFORMATION, AND CREDIT CARD NUMBER (1234)
A11 CALCULATE THE AMOUNT OF PURCHASE
A12 RECEIVE PERSONAL INFORMATION, CREDIT CARD NUMBER (1234), TRANSACTION AMOUNT, AND SALES CENTER INFORMATION

FIG. 11

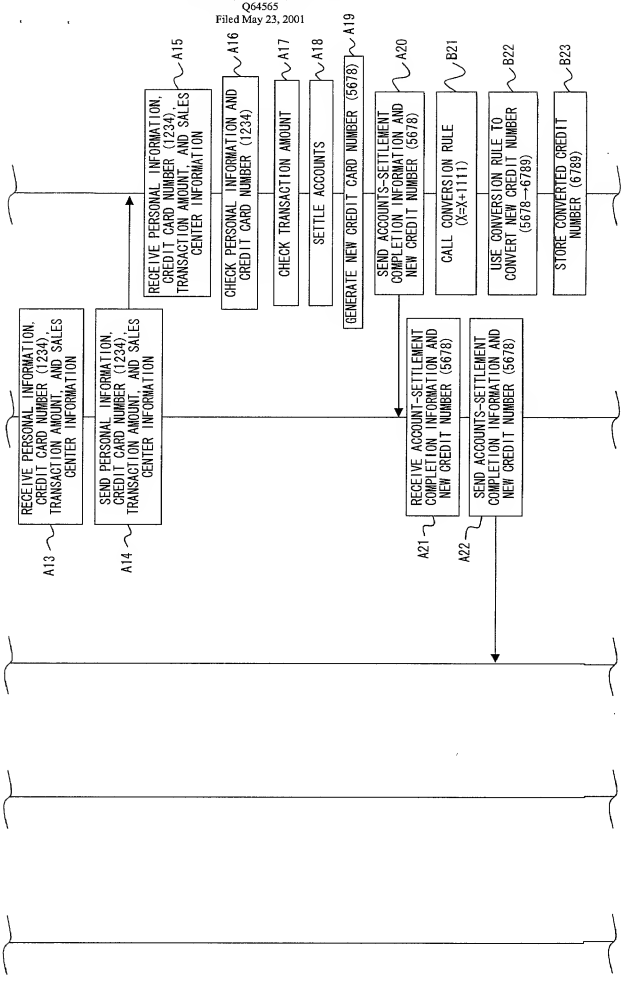
RECEIVE PERSONAL INFORMATION, CREDIT CARD NUMBER (1234), TRANSACTION AMOUNT, AND SALES CENTER INFORMATION
A13
SEND PERSONAL INFORMATION, CREDIT CARD NUMBER (1234), TRANSACTION AMOUNT, AND SALES CENTER INFORMATION
A14
RECEIVE PERSONAL INFORMATION, CREDIT CARD NUMBER (1234), TRANSACTION AMOUNT, AND SALES CENTER INFORMATION
A15
CHECK PERSONAL INFORMATION AND CREDIT CARD NUMBER (1234)
A16
CHECK TRANSACTION AMOUNT
A17
SETTLE ACCOUNTS
A18
GENERATE NEW CREDIT CARD NUMBER (5678)
A19
SEND ACCOUNTS-SETTLEMENT COMPLETION INFORMATION AND NEW CREDIT NUMBER (5678)
A20
CALL CONVERSION RULE (X=X+1111)
B21
USE CONVERSION RULE TO CONVERT NEW CREDIT NUMBER (5678→6789)
B22
STORE CONVERTED CREDIT NUMBER (6789)
B23
RECEIVE ACCOUNT-SETTLEMENT COMPLETION INFORMATION AND NEW CREDIT NUMBER (5678)
A21
SEND ACCOUNTS-SETTLEMENT COMPLETION INFORMATION AND NEW CREDIT NUMBER (5678)
A22

FIG. 12

A23
RECEIVE ACCOUNTS-SETTLEMENT COMPLETION INFORMATION AND NEW CREDIT CARD NUMBER (5678)
A24
SHIP PRODUCT
A25
SEND TRANSACTION COMPLETION NOTIFICATION AND NEW CREDIT CARD NUMBER (5678)
END
END
END
A26
RECEIVE TRANSACTION COMPLETION NOTIFICATION AND NEW CREDIT CARD NUMBER (5678)
A27
READ CONVERSION RULE
A29
USE CONVERSION RULE TO CONVERT NEW CREDIT CARD NUMBER (5678→6789)
A30
SEND CONVERTED CREDIT CARD NUMBER (6789)
A33
DISPLAY INFORMATION INDICATING THAT TRANSACTION HAS BEEN COMPLETED
END
A28
SEND CONVERSION RULE (X=X+11111)
A31
RECORD CONVERTED CREDIT CARD NUMBER (6789)
INFORM THAT CREDIT CARD NUMBER HAS BEEN RECORDED
A32
END

FIG . 13(1)

NAME	PRODUCT NO.	PRICE	PURCHASE
PRODUCT A	aaaa	¥3,000	☐
PRODUCT B	bbbb	¥2,000	☑
PRODUCT C	cccc	¥1,500	☐
....			

PURCHASE

FIG . 13(2)

DESIRED PRODUCT : PRODUCT B

ADDRESS : xxxxxxxxxxxx

NAME : xxxxxxx

TELEPHONE NO. : xxxxxxx

PAYMENT METHOD : ☑ CREDIT CARD

☐ BANK CARD

PERSONAL IDENTIFICATION NUMBER :

SEND

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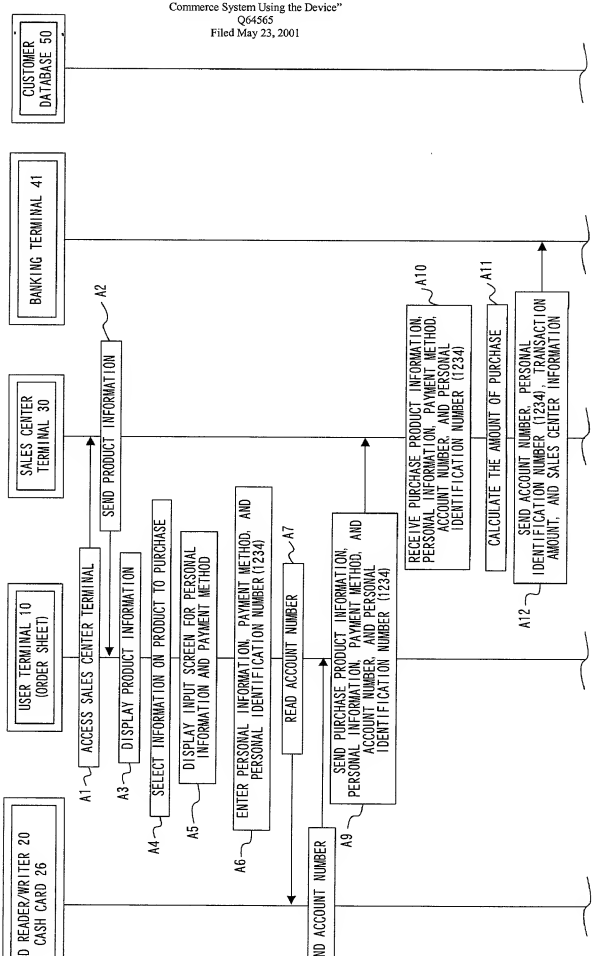
Q64565
Filed May 23, 2001

FIG .14


CARD READER/WRITER 20
CASH CARD 26
USER TERMINAL 10
(ORDER SHEET)
SALES CENTER TERMINAL 30
BANKING TERMINAL 41
CUSTOMER DATABASE 50
A1 ACCESS SALES CENTER TERMINAL
A2 SEND PRODUCT INFORMATION
A3 DISPLAY PRODUCT INFORMATION
A4 SELECT INFORMATION ON PRODUCT TO PURCHASE
A5 DISPLAY INPUT SCREEN FOR PERSONAL INFORMATION AND PAYMENT METHOD
A6 ENTER PERSONAL INFORMATION, PAYMENT METHOD, AND PERSONAL IDENTIFICATION NUMBER (1234)
A7 READ ACCOUNT NUMBER
A8 SEND ACCOUNT NUMBER
A9 SEND PURCHASE PRODUCT INFORMATION, PERSONAL INFORMATION, PAYMENT METHOD, AND ACCOUNT NUMBER, AND PERSONAL IDENTIFICATION NUMBER (1234)
A10 RECEIVE PURCHASE PRODUCT INFORMATION, PERSONAL INFORMATION, PAYMENT METHOD, ACCOUNT NUMBER, AND PERSONAL IDENTIFICATION NUMBER (1234)
A11 CALCULATE THE AMOUNT OF PURCHASE
A12 SEND ACCOUNT NUMBER, PERSONAL IDENTIFICATION NUMBER (1234), TRANSACTION AMOUNT, AND SALES CENTER INFORMATION

Tatsuhiro IBUKI
"User Authentication Device and Electric Commerce System Using the Device"
Serial No. 09/863,555
Filed May 23, 2001

FIG .15

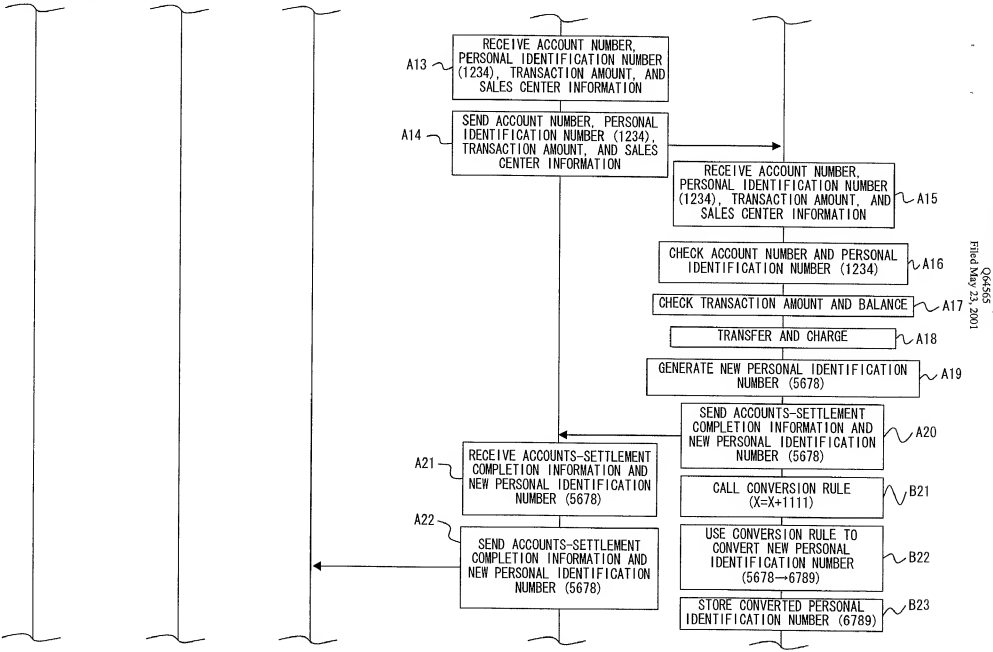
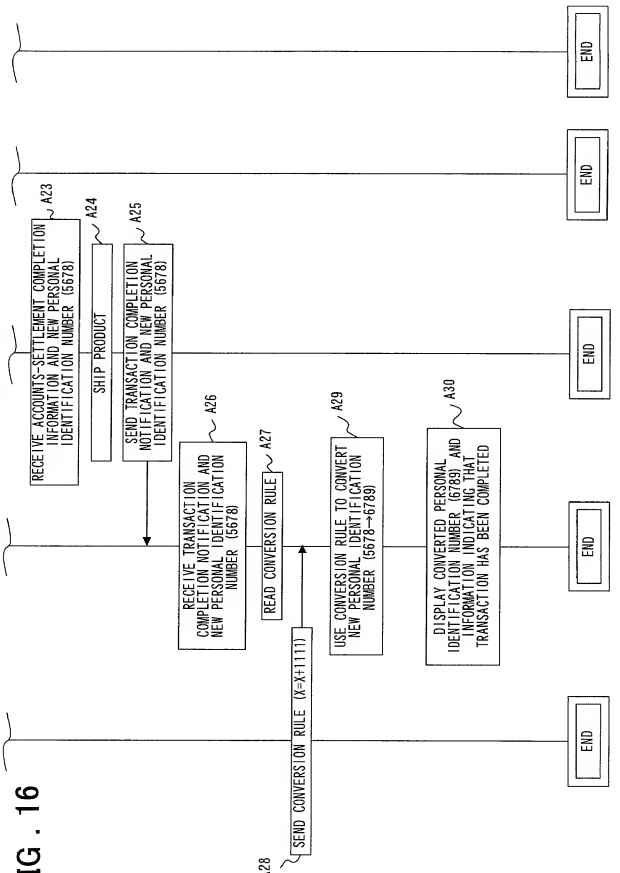


FIG. 16


RECEIVE ACCOUNTS-SETTLEMENT COMPLETION INFORMATION AND NEW PERSONAL IDENTIFICATION NUMBER (5678)
A23
SHIP PRODUCT
A24
SEND TRANSACTION COMPLETION NOTIFICATION AND NEW PERSONAL IDENTIFICATION NUMBER (5678)
A25
RECEIVE TRANSACTION COMPLETION NOTIFICATION AND NEW PERSONAL IDENTIFICATION NUMBER (5678)
A26
READ CONVERSION RULE
A27
SEND CONVERSION RULE (X=X+1111)
A28
USE CONVERSION RULE TO CONVERT NEW PERSONAL IDENTIFICATION NUMBER (5678→6789)
A29
DISPLAY CONVERTED PERSONAL IDENTIFICATION NUMBER (6789) AND INFORMATION INDICATING THAT TRANSACTION HAS BEEN COMPLETED
A30
END
END
END
END
END